UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,833	12/13/2001	Sophie Vrzic	7000-114	1051

27820 7590 04/05/2007

WITHROW & TERRANOVA, P.L.L.C.
100 REGENCY FOREST DRIVE
SUITE 160
CARY, NC 27518

EXAMINER	
MEUCCI, MICHAEL D	
ART UNIT	PAPER NUMBER
2142	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
2 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/020,833
Filing Date: December 13, 2001
Appellant(s): VRZIC ET AL.

John R. Witcher, III (Reg. No. 39,877)
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 19 December 2006 appealing from the Office action mailed 24 April 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Rananand et al. (U.S. 5,935,213); Issued: 10 August 1999.

Ganz et al. (U.S. 6,049,549) ; Issued: 11 April 2000.

Ketcham (U.S. 6,363,429 B1); Issued 26 March 2002.

Kilkki et al. (U.S. 6,421,335 B1)

Walton et al. (U.S. 6,493,331 B1); Issued: 10 December 2002.

Fawaz et al. (U.S. 6,654,374) ; Issued: 25 November 2003.

Bahl et al. (U.S. 6,795,865 B1); Issued: 21 September 2004.

Liao et al. (U.S. 2004/0136379 A1); Published: 15 July 2004.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 10, 19, and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl et al. (U.S. 6,795,865 B1) hereinafter referred to as Bahl, in view of Ketcham (U.S. 6,363,429 B1) and Rananand et al. (U.S. 5,935,213) hereinafter referred to as Rananand.

a. As per claims 1, 10, 19, and 28, Bahl teaches: a network interface for receiving data from a communication network (lines 42-49 of column 5); a wireless interface for transmitting units of the data to a plurality of access terminals (lines 14-28 of column 1); a control system associated with the network interface and the wireless interface and adapted to generate a prioritization factor for each unit of data, the prioritization factor being controlled in proportion to a required data rate associated with each unit of data (lines 50-63 of column 2 and lines 47-53 of column 1); the prioritization factor being controlled to achieve an adaptive fairness objective (lines 6-10 of column 1, lines 2-10 of column 2, and lines 11-18 of column 2); and scheduling transmission of

each unit of data based on the prioritization factor (line 55 of column 2 through line 3 of column 3).

Bahl does not explicitly teach: storing the data received over the communication network as units corresponding to the plurality of access terminals. However, Ketcham discloses: "In one exemplary preferred embodiment of the present invention, at Step 34 a data buffer is maintained including multiple data structures for multiple data packets that have arrived on a data stream 18 between a source network device 14 and a destination network device 16 on the computer network 12 during a current time interval. An exemplary data structure used in the data buffer for data packets is illustrated in Table 1. However, the present invention is not limited to the data structure illustrated in Table 1, and other data structures with more or fewer data structure fields can also be used in the data buffer for data packets," (lines 8-18 of column 7). It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to store the data received over the communication network as units corresponding to the plurality of access terminals. "The data structure illustrated in Table 1 is stored in the data buffer in a fashion that facilitates both rapid resolution of a calculated data traffic signature to known data traffic signatures as well as rapid cleanup of entries for data streams that have sent no data for significant periods of time (e.g., greater than 1 minute). In one exemplary preferred embodiment of the present invention, the data structures are stored in a circular buffer, with a fixed size related to a maximum packet arrival rate and required arrival time period for a general data stream. The circular buffer includes a spanning tree to locate the data structures based on

source/destination network addresses and/or on source/destination network ports or sockets (see Table 1)," (lines 30-42 of column 7 in Ketcham). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to store the data received over the communication network as units corresponding to the plurality of access terminals in the system as taught by Bahl.

Bahl also does not explicitly teach: the prioritization factor being controlled to maintain a minimum desired data rate associated with each unit of data. However, Ketcham discloses: "Class-of-service parameters typically include maximum downstream data rates, maximum upstream data rates, upstream channel priority, guaranteed minimum data rates, guaranteed maximum data rate and other parameters," (lines 57-61 of column 1). It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have the prioritization factor controlled to maintain a minimum desired data rate associated with each unit of data. "There have been attempts to use Class-of-Service ("CoS"), Quality-of-Service ("QoS") or Type-of-Service ("ToS") parameters in routers and switches in computer networks. As is known in the art, a router routes data packets to an appropriate device on a network topology. A switch switches data among multiple channels and/or time slots. A Class-of-Service provides a reliable (i.e., error free, in sequence, with no loss of duplication) transport facility independent of the Quality-of-Service," (lines 49-57 of column 1 in Ketcham). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the prioritization factor

being controlled to maintain a minimum desired data rate associated with each unit of data in the system as taught by Bahl.

Bahl also does not explicitly teach: more emphasis is place on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate. However, Rananand discloses: "Other connections may be provided with a minimum service rate, in which case they will be ensured at least a specified minimum rate, but may be transferred faster when there is available transfer bandwidth above that required for the connections for which there is a service rate guarantee," (lines 2-7 of column 5); and "Generally, if the buffer occupancy rate is relatively high, in determining an explicit rate value for field 45 of an RM cell that is associated with a particular connection, among a number of connections serviced by the particular output port module 61(p), the RM cell information generator 85 will consider the resources which are devoted to the particular connection, which, in turn, so as to permit generally equal sharing of the resources among all of the connections serviced by the output port module 61(p)," (lines 7-19 of column 18). It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to place more emphasis on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate. "This service rate may differ as among the various connections, although for various ones of the connections being serviced by a switching node 11(n) the service rate guarantees may be similar or identical," (line 66 of column 4 through line 2 of column 5 in Rananand). It is for this

reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to place more emphasis on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate in the system as taught by Bahl.

b. Claims 10, 19, and 28 contain substantially the same limitations as stated in claim 1 and are rejected under the same rationale.

3. Claims 8, 17, and 26 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, Rananand as applied to claims 1, 10, and 19 respectively.

As per claims 8, 17, and 26, Bahl does not explicitly teach: a plurality of carriers are available to transmit the units of data and the control system is further adapted to generate the prioritization factor for each unit of data for each of the plurality of carriers and schedule the transmission of each unit of data on at least one of the plurality of carriers based on the prioritization factor. However, Ketcham discloses: "In one exemplary preferred embodiment of the present invention, a network device such as a routing/switching device will reserve a data channel or timeslot for data packets in the data stream. Allocating network device resources on a network device to provide a desired priority to data packets in the data stream includes allocating resources to provide a desired processing priority including a Quality-of-Service to data packets in the data stream," (lines 58-65 of column 12).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have a plurality of carriers available to transmit the units of data

and the control system is further adapted to generate the prioritization factor for each unit of data for each of the plurality of carriers and schedule the transmission of each unit of data on at least one of the plurality of carriers based on the prioritization factor. "There have been attempts to use Class-of-Service ("CoS"), Quality-of-Service ("QoS") or Type-of-Service ("ToS") parameters in routers and switches in computer networks. As is known in the art, a router routes data packets to an appropriate device on a network topology. A switch switches data among multiple channels and/or time slots. A Class-of-Service provides a reliable (i.e., error free, in sequence, with no loss of duplication) transport facility independent of the Quality-of-Service. Class-of-service parameters typically include maximum downstream data rates, maximum upstream data rates, upstream channel priority, guaranteed minimum data rates, guaranteed maximum data rate and other parameters," (lines 49-61 of column 1 in Ketcham). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have a plurality of carriers available to transmit the units of data and the control system is further adapted to generate the prioritization factor for each unit of data for each of the plurality of carriers and schedule the transmission of each unit of data on at least one of the plurality of carriers based on the prioritization factor in the system as taught by Bahl.

4. Claims 2, 11, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, and Rananand as applied to claims 1, 10, and 19 respectively, further in

view of Fawaz et al. (U.S. 6,654,374 B1) hereinafter referred to as Fawaz and Ganz et al. (U.S. 6,049,549) hereinafter referred to as Ganz.

As per claims 2, 11, and 20, Bahl does not explicitly teach: the adaptive fairness objective functions adaptively increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data. However, Fawaz discloses: "A packet-switched communication network in accordance with the invention provides a guaranteed minimum bandwidth between pairs of Packet Switches by defining Service Level Agreements (SLAs). An SLA is defined by at least a source identifier, a destination identifier, and a minimum data rate although other information can also be used," (Abstract). Ganz adds: "The invention provides, in general, a media control that supports transmission of data streams with QoS requirements, such as minimum throughput or maximum delay, while adapting to the changing characteristics of the wireless transmission medium. In addition, assignment of limited resources, in particular, the limited communication capacity of the transmission medium, is tightly coupled to the media control approach," (lines 8-15 of column 2); and "The resource manager can also consider other factors such as utility and priorities of communication sessions. The available bandwidth is taken into account to allow a requested data rate to be achieved despite retransmissions necessitated by interference, physical separation, of other error-causing situations," (lines 22-27 of column 2).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have the adaptive fairness objective functions adaptively

increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data. "A scheduler in the node ensures that packets from each SLA are scheduled for transmission at at least the minimum data rate corresponding to the SLA," (lines 41-44 of column 4 in Fawaz) and "The polling manager uses an efficient "just in time" polling of stations based on their allocated bandwidth or communication rates. Stations that do not use their allocated rates are polled less often than those which use their allocation, thereby increasing the total throughput of the system and providing proper quality of service support for real-time applications. Advantages of the invention include quality of service support which is needed for real-time multimedia applications, responsiveness to time varying communication capacity, resource allocation in accordance with effective bandwidth between pairs of stations, and admission of sessions only if their minimum required data rates are achievable," (lines 27-39 of column 2 in Ganz). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the adaptive fairness objective functions adaptively increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data in the system as taught by Bahl and Ketcham.

5. Claims 3, 12, and 21 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, and Rananand as applied to claims 1, 10, and 19 respectively, further in view of Liao et al. (U.S. PG Pub. 2004/0136379 A1) hereinafter referred to as Liao.

As per claims 3, 12, and 21, Bahl does not explicitly teach: when there are insufficient resources to maintain the minimum desired data rate associated with each unit of data, the control system is further adapted to control the prioritization factor for each unit of data to reduce the variance in data rates associated with the units of data between different users. However, Liao discloses: "In addition, it can be desirable to adjust the allocations of bandwidth in such a way as to minimize the variance of the adjustment amounts, the sum of the adjustment amounts, and/or the sum of the absolute values of the adjustment amounts," (paragraph [0227] on page 21).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention, that when there are insufficient resources to maintain the minimum desired data rate associated with each unit of data, the control system is further adapted to control the prioritization factor for each unit of data to reduce the variance in data rates associated with the units of data between different users. "Because of the risk of delay or loss of data, customers of the network sometimes seek to protect themselves by entering into "service level agreements" which can include guarantees such as maximum packet loss rate, maximum packet delay, and maximum delay "jitter" (i.e., variance of delay)," (paragraph [0055] on page 4 of Liao). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the control system further adapted to control the prioritization factor for each unit of data to reduce the variance in data rates associated with the units of data between different users when there are insufficient resources to

maintain the minimum desired data rate associated with each unit of data in the system as taught by Bahl and Ketcham.

6. Claims 4-5, 13-14, and 22-23 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, and Rananand as applied to claims 1, 10, and 19 respectively, further in view of Walton et al. (U.S. 6,493,331 B1) hereinafter referred to as Walton.

a. As per claims 4, 13, and 22, Bahl does not explicitly teach: the adaptive fairness objective is configurable to make overall throughput of the units of data inversely proportional to fairness between different users. However, Walton discloses: "As an example of a simple ranking scheme, users are given a ranking based on their overall average throughput. In this example, the ranking assigned to the users are inversely proportional to the C/I of the users (i.e., lowest C/I=highest priority), "(lines 28-32 of column 41).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have the adaptive fairness objective configurable to make overall throughput of the units of data inversely proportional to fairness between different users. "In an embodiment, a cell is provided with information descriptive of the interference experienced by each active user in the cell due to transmissions from other cells. When the number of active users exceeds the number of allocated channels, the cell can then select the user with the higher tolerance to interference and place that user in an overlapping (non-orthogonal) channel that provides the best overall C/I for

that user," (lines 57-64 of column 40 in Walton) and "The last column is the rank associated with each user in cell 1, where a rank of 1 typically indicates the highest priority. The ranking can be based on a number of ranking schemes, some of which are described below, depending on the overall objectives of the system," (lines 24-28 of column 40 in Walton). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the adaptive fairness objective configurable to make overall throughput of the units of data inversely proportional to fairness between different users in the system as taught by Bahl and Ketcham.

b. As per claims 5, 14, and 23, Bahl teaches time-sensitive data (lines 30-40 of column 2).

Bahl does not explicitly teach: select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach. However, Walton discloses: "The type of data to be transmitted may be considered in assigning priority among users. Some data types are time sensitive and require quick attention. Other data types can tolerate longer delay in transmission. Higher priority can be assigned to data that is time critical," (lines 40-44 of column 23), and "As an example of a simple ranking scheme, users are given a ranking based on their overall average throughput. In this example, the ranking assigned to the users are

inversely proportional to the C/I of the users (i.e., lowest C/I=highest priority)," (lines 28-32 of column 41). The combination of these two aspects as disclosed by Walton in combination with Bahl and Ketcham clearly embodies the claimed invention.

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach. "As an example, data being retransmitted can be given higher priority than data transmitted for the first time. The retransmitted data typically corresponds to data previously transmitted and received in error. Since the signal processing at the receiver may be dependent on the data received in error, the retransmitted data can be given higher priority.

The type of data services being provided may be considered in assigning user priority. Higher priority can be assign to premium services (e.g., those charged higher prices). A pricing structure can be established for different data transmission services. Through the pricing structure, the user can determine, individually, the priority and the type of service the user can expect to enjoy," (lines 44-57 of column 23 in Walton). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control

the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach in the system as taught by Bahl and Ketcham.

7. Claims 6, 15, and 24 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, Rananand, and Walton as applied to claims 5, 14, and 23 respectively.

Bahl teaches: each time-sensitive unit of data is associated with a start time (lines 2-10 of column 2); the start time represents a threshold when the prioritization factor for the unit of data is adjusted based on the delay bound (lines 30-40 of column 2).

8. Claims 7, 16, and 25 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, Rananand, and Walton as applied to claims 5, 14, and 23 respectively, further in view of Kilkki et al. (U.S. 6,421,335 B1) hereinafter referred to as Kilkki.

Bahl does not explicitly teach: the control system is further adapted to adjust the prioritization factor for each time-sensitive unit of data to control the maximum percentage of the units of data that can be dropped prior to transmission. However, Kilkki discloses: "In one embodiment of the invention, the load is determined as the ratio of number N users to the maximum number of users N.sub.max allowed. Thus, PL.sub.a changes over time with a changing number of concurrent users. Where the packet has a priority equal to or greater than PL.sub.a, the packet is transmitted.

Otherwise it is selectively discarded or suspended for a period of time. Where the packet is suspended, it is suspended until the MBR drops down enough due to the elapsed time (during which the average bit rate goes down), or until the load of the interface decreases. Where a packet's priority is less than PL.sub.a, it is typically discarded in time sensitive situations, such voice packets," (lines 12-24 of column 7).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have the control system further adapted to adjust the prioritization factor for each time-sensitive unit of data to control the maximum percentage of the units of data that can be dropped prior to transmission. "Essentially, with increasing load (N/N.sub.max), the allowed priority level PL.sub.a increases and reduces the number of packets that are allowed to be transmitted. Therefore, users with higher established priorities (i.e., higher NBR or due to moderate transmission rates) have a relatively greater chance of having their data packets transmitted successfully," (lines 25-30 of column 7 in Kilkki). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the control system further adapted to adjust the prioritization factor for each time-sensitive unit of data to control the maximum percentage of the units of data that can be dropped prior to transmission in the system as taught by Bahl, Ketcham, and Walton.

9. Claims 9, 18, and 27 rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, Ketcham, and Rananand as applied to claims 1, 10, and 27 respectively, in view of Fawaz and Walton.

As per claims 9, 18, and 27, Bahl does not explicitly teach: the adaptive fairness objective functions adaptively increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data. However, Fawaz discloses: "A packet-switched communication network in accordance with the invention provides a guaranteed minimum bandwidth between pairs of Packet Switches by defining Service Level Agreements (SLAs). An SLA is defined by at least a source identifier, a destination identifier, and a minimum data rate although other information can also be used," (Abstract). Ganz adds: "The invention provides, in general, a media control that supports transmission of data streams with QoS requirements, such as minimum throughput or maximum delay, while adapting to the changing characteristics of the wireless transmission medium. In addition, assignment of limited resources, in particular, the limited communication capacity of the transmission medium, is tightly coupled to the media control approach," (lines 8-15 of column 2); and "The resource manager can also consider other factors such as utility and priorities of communication sessions. The available bandwidth is taken into account to allow a requested data rate to be achieved despite retransmissions necessitated by interference, physical separation, of other error-causing situations," (lines 22-27 of column 2).

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have the adaptive fairness objective functions adaptively increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data. "A

scheduler in the node ensures that packets from each SLA are scheduled for transmission at at least the minimum data rate corresponding to the SLA," (lines 41-44 of column 4 in Fawaz) and "The polling manager uses an efficient "just in time" polling of stations based on their allocated bandwidth or communication rates. Stations that do not use their allocated rates are polled less often than those which use their allocation, thereby increasing the total throughput of the system and providing proper quality of service support for real-time applications. Advantages of the invention include quality of service support which is needed for real-time multimedia applications, responsiveness to time varying communication capacity, resource allocation in accordance with effective bandwidth between pairs of stations, and admission of sessions only if their minimum required data rates are achievable," (lines 27-39 of column 2 in Ganz). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have the adaptive fairness objective functions adaptively increase the prioritization factor as an average data rate associated with each unit of data approaches the minimum desired data rate associated with each unit of data in the system as taught by Bahl and Ketcham.

Bahl also does not explicitly teach: select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach. However, Walton discloses: "The type of data to be

transmitted may be considered in assigning priority among users. Some data types are time sensitive and require quick attention. Other data types can tolerate longer delay in transmission. Higher priority can be assigned to data that is time critical," (lines 40-44 of column 23), and "As an example of a simple ranking scheme, users are given a ranking based on their overall average throughput. In this example, the ranking assigned to the users are inversely proportional to the C/I of the users (i.e., lowest C/I=highest priority)," (lines 28-32 of column 41). The combination of these two aspects as disclosed by Walton in combination with Bahl and Ketcham clearly embodies the claimed invention.

It would have been obvious to one of ordinary skill in the art at the time of the Appellant's invention to have select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach. "As an example, data being retransmitted can be given higher priority than data transmitted for the first time. The retransmitted data typically corresponds to data previously transmitted and received in error. Since the signal processing at the receiver may be dependent on the data received in error, the retransmitted data can be given higher priority.

The type of data services being provided may be considered in assigning user priority. Higher priority can be assign to premium services (e.g., those charged higher prices). A pricing structure can be established for different data transmission services.

Through the pricing structure, the user can determine, individually, the priority and the type of service the user can expect to enjoy," (lines 44-57 of column 23 in Walton). It is for this reason that one of ordinary skill in the art at the time of the Appellant's invention would have been motivated to have select ones of the units of data are time-sensitive and associated with a delay bound and the control system is further adapted to control the prioritization factor for each time-sensitive unit of data in inverse proportion to an amount of time prior to the delay bound associated with each time-sensitive unit of data wherein the time-sensitive units of data are given higher priorities as the delay bounds approach in the system as taught by Bahl and Ketcham.

(10) Response to Argument

A. The Claims Are Not Obvious Because Bahl, Ketcham, and Rananand Fail To Teach or Suggest the Claim Feature of More Emphasis is Placed on Fairness When Many Users Are Close to the Required Data Rate and More Emphasis is Placed On Maximizing Throughput When All Users Are Far From the Required Data Rate.

A1. In response, the Appellant admits that the cited portion of Rananand (col. 4, line 65 through col. 5, line 7) indicates that higher transfer rates are used when there is available bandwidth for connections, which are associated with a specified minimum rate, i.e., anytime there is extra bandwidth, the transfer rates may be increased (see lines 26-30 on page 11 of Appellant's arguments). The stated fact that higher transfer rates are used when bandwidth is available explicitly purports that transfer rates will be increased until bandwidth is no longer available, thereby maximizing throughput. Additionally, Rananand states: "Generally, if the buffer occupancy rate is relatively high, in determining an explicit rate value for field 45 of an RM cell that is associated with a particular connection, among a number of connections serviced by the particular output port module 61(p),the RM cell information generator 85 will consider the resources which are devoted to the particular connection, which, in turn, so as to permit generally *equal sharing* of the resources among all of the connections serviced by the output port module 61(p)," (lines 7-15 of column 18). From this portion of Rananand, one can clearly recognize that the equal sharing of the resources among all of the connections emphasizes fairness when the buffer occupancy rate is relatively high, causing

throughput to be low due to the buffer being full and dropping transfer rates near or below the minimum required transfer rate.

A2. Additionally, the Appellant argues that the throughput and fairness component has two components: the first component maximizing throughput by giving a higher priority to a user with a higher selected data rate, while the second component guarantees the minimum throughput and controls the degree of fairness by comparing the average throughput to the minimum required throughput (see lines 28-31 on page 12 of Appellant's arguments). In response to Appellant's argument that the references fail to show certain features of Appellant's invention, it is noted that the features upon which Appellant relies (i.e., that the throughput and fairness component has two components: the first component maximizing throughput by giving a higher priority to a user with a higher selected data rate, while the second component guarantees the minimum throughput and controls the degree of fairness by comparing the average throughput to the minimum required throughput) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

A3. The Appellant continues with the above arguments in that: "The throughput and fairness component has a variable *a*, which varies depending on how close the users are to their respective required minimum throughput rate (Specification, paragraph 0024). Thus, the fairness and throughput component of the priority factor has the following properties: as *a* increases (i.e., users are far away from the required data

rate), then throughput is increased (i.e., more emphasis is placed on throughput); and as a decreases (i.e., the users are close to the required data rate), the degree of fairness increases (i.e., more emphasis is placed on fairness) (Specification, paragraph 0025). As *a* approaches 1 (i.e., all the users are far from the required data rate), then the scheduler is equivalent to a maximum C/I scheduler, where the channel with the best channel conditions would get the highest priority (Specification, paragraph 0025)," (see lines 1-10 on page 13 of Appellant's arguments). Again, the features argued here are not recited in the claim language. The examiner cannot read these detailed limitations into the claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

A4. The Appellant appears to be arguing that the terms "more emphasis," "many users," and "fair from the required data rate" have not been given reasonable interpretation (see lines 2-6 on page 14 of Appellant's arguments). While stating that these interpretations are unreasonable, the Appellant has failed to provide a reasonable interpretation of the terms and failed to present any explanation as to why they consider the interpretation of the terms unreasonable. The Appellant states that ignoring "more emphasis" is improper but fails to explicitly state what the broadest reasonable interpretation of the term is and simply argues that it is not reasonable without providing a reason as to why the interpretation is unreasonable.

A5. The Appellant argues that even under a broad interpretation, the terms "more emphasis," "many users," and "far from the required data rate" must be given

some weight and cannot be ignored as the Patent Office seemingly wants to do (see lines 2-4 on page 14 of Appellant's arguments). The Appellant continues with: "Rananand fails to teach or suggest scheduling the data units for transmission based on a prioritization factor such that more emphasis is place on fairness when many users are close to the required data rate and more emphasis is placed on maximizing throughput when all users are far from the required data rate," (see lines 7-11 on page 14 of Appellant's arguments). The Appellant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

B. The Appellant's arguments in section E on page 16 through section I on page 17 are mere recitations that the dependent claims are not obvious because the independent claims are not obvious as argued above. No additional arguments are provided in these sections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

BEATRIZ PRIETO
PRIMARY EXAMINER

Mm MM

26 March 2007

Conferees:

Beatriz Prieto (Prim. Ex.)

BEATRIZ PRIETO
PRIMARY EXAMINER

Andrew Caldwell (SPE)

ANDREW CALDWELL
SUPERVISORY PATENT EXAMINER

Correspondence Address of Record:

John R. Witcher, III
Withrow & Terranova, P.L.L.C.
100 Regency Forest Drive
Suite 160
Cary, NC 27518